

for the bird it was not proposed until 1852. This will necessitate the adoption of Elliot's *Dendragapus*, if we consider the Dusky Grouse congeneric with the Spruce Partridge. For the subgenus embracing the latter, a substitute for *Canace* is necessary, and to avoid too great dissimilarity it may be called *Canachites*.\*

### THE CHACLACAYO TREPHINED SKULL.

By OTIS T. MASON.

In the Journal of the Anthropological Institute of New York for 1871-72, Mr. Squier describes a skull which was taken from an Inca cemetery in the valley of the Yucay, within 1 mile of the Baths of the Incas. This skull is figured also in Mr. Squier's "Incidents of travel and exploration in the land of the Incas." † It has a square perforation on the left frontal prominence, made by the intersection of four furrows, cut probably with a stone implement. "In 1875, Mr. Henry Gilman, of Detroit, published in the American Naturalist ‡ a description of ten or fifteen skulls obtained from mounds on Sable River, Lake Huron, and two fragments from Grape Mound, Rouge River, Michigan." Each of these skulls was perforated at the vertex, evidently done by boring with a rude, probably stone instrument, varying in size (in some instances having a diameter one-third of an inch; in others of one-half an inch, and flaring at the surface). §

In August, 1873, M. Prunieres made a communication, at the Lyons meeting of the French Association for the Advancement of Science, on cranial amulets. || These amulets are roundish pieces of the human skull, some of them evidently taken out long enough before the death of the individual to allow a certain degree of healing.

In 1877 Dr. Paul Broca published an article in the Revue d'Anthropologie on the trephining of the skull and cranial amulets in the Neolithic period. ¶ Between 1877 and 1882 several scattered communications were made upon the same subject before different societies in Europe. Dr. Robert Fletcher, of Washington, from whom most of this historical matter is taken, published in the fifth volume of Major Powell's Con-

\* Deriv., *καταχέω*, to be noisy. Type, *Tetrao canadensis* Linn.

† Peru. Incidents of travel and exploration in the land of the Incas. By E. George Squier. New York. Harper's, 1877, p. 456; Appendix A, 577-580.

‡ American Naturalist, Salem, 1875, IX, 73.

§ Fletcher. "Prehistoric Trephining," 24; also Proceedings Am. Assoc., 24th meeting, pp. 316-331, and *ibid.*, Nashville meeting, 1877, 335-339, both quoted by Dr. Fletcher. See also Holbrook in American Naturalist, 1877, XI, 688.

|| Association Française pour l'Avancement des Sciences. Compte rendu 2<sup>me</sup> session. Lyon, 1873; Paris, 1874; p. 703. Also Bull. Soc. d'Anthrop. de Paris, 1874, 2 s., IX, 185-205.

¶ Sur la trépanation du crâne, et les amulettes crâniennes à l'époque néolithique, par Paul Broca. Paris, 1877; also, Rev. d'Anthrop., Paris, 1877, VI, 1-42, 193-225; also, Congrès d'Anthrop. et d'Archéol. prehist., Buda-Pesth, 1876, 101-192.

tributions to North American Ethnology an elaborate paper upon the same subject, in which he brings together all that had been previously written.\* His unparalleled advantages in becoming familiar with medical literature enabled him to exhaust the subject up to 1882. Since that time little of any account has been published. Dr. Fletcher discovered that in treating of this subject he had to deal with two entirely different sets of phenomena—the one had reference to the living, the other to the dead. He also tells us “there are three processes by which an opening in the cranium can be methodically produced—by rotary movement, by cutting [sawing ?], and by scraping.”

Trephining upon the living, if successful and the patient recovered, was followed by cicatrizing; if the patient died under the treatment, the wound would present scarcely a different appearance from the cut made upon the skull of the dead. It is more than probable, however, that even among savages a different method and instrumentation would be used in the two cases. There are on record accounts of surgical operations performed upon the living, even among very savage races. Dr. Fletcher makes allusion to several localities in which this practice exists. All of the examples of aboriginal trephining in America were more than probably *post mortem*. Those alluded to by Mr. Gilman in the American Naturalist, to which he has added several examples since, and the specimens figured by Mr. Squier, show no certain marks of cicatrizing.

The National Museum has recently received from Dr. W. H. Jones, U. S. N., the most remarkable specimen of *post-mortem* trephining which has yet come to light. It is a skull obtained from Chaclacayo, near Chosica, a mountain in Peru, near Lima, about 4,000 feet high. Three mummies—man, woman, and child—were obtained from one grave. From the same place were obtained several skulls of peculiar shape, including the one under consideration. The specimen belongs to the elongated Inca type. The section or roundel was taken from the center of the frontal bone, and the opening is about  $2\frac{1}{2}$  inches in length and nearly 2 inches in width. The outline of the cutting is a polygon. Eight distinct furrows are visible upon the surface of the skull. The work seems to have been done in the most bungling manner. One furrow must have been cut across the space longitudinally, and the parts on either side of this main furrow were taken away piecemeal, by a combination of furrows and fractures. At the extremity of some of the furrows scratches are visible, which seem to indicate that the bone was removed by means of a chipped stone implement.

It is impossible to conjecture the design of this singular custom. We are not able to say even whether the bone was taken out just previous to or after death. No rondelles or fragments of the bone removed have been found in this continent similar to those discovered by M. Prunieres.

\* On Prehistoric Trephining and Cranial Amulets. by Robert Fletcher, M. R. C. S. Eng., acting assistant surgeon U. S. A., Cont. N. A. Ethnology, VI.

## DESCRIPTION OF FIGURES, PLATE XXII.

FIG. 1. Inca skull from Chacalayco, Peru. The specimen is so deformed as to admit of no delicate measurements, neither could the capacity be obtained. In addition to the usual deformation produced by bandaging, the occipital region is slightly bent to the left, and the nasal spine so completely warped toward the left as to be seen entirely in front of the orifice on that side. Length, 6.8 inches; width, 5.3 inches; bizygomatic width, 5.35 inches.

FIGS. 2 and 3. Plan of cuttings on the cranium. *a a'*, a gash 3 inches long, oblique to the antero-posterior vertical plane of the skull, and dividing the excision into two unequal parts, the greater on the left side. It is hard to divine why this cut was made. It is not connected with the removal, for the curved cut *e e'* severs it above, while there is not the faintest trace of it below the surface in the cut *b b'* below. Its lower extremity is merely a scratch on the surface of the bone. *b b'*, a tolerably straight and effective cut obliquely across the lower right corner, looking with the skull. It is deep above, slight below, and penetrates the bone, except in a small space in the middle, where the inner table was fractured to remove the piece. (Seen better in Fig. 3.) By laying a straight edge in the cut, its lower margin reaches quite through, except in the short space just mentioned. *e e'*, a straight cut obliquely across the upper right-hand corner, shallow and barely perforating the upper table. The inner table has been violently broken by a series of irregular scallops, seen better in Fig. 3. *d d'*, a short furrow directly across the bottom or front of the cavity; upon the right its termination is very plainly marked, while its other extremity is scarcely visible. This cutting extends to the inner table, which shows signs of breaking, especially the upper portion of the ethmoid, (*k*, Figs. 2 and 3). A marked difference exists between this cut and some others, *b b'* for instance. The latter resembles the furrow of a straight-edged saw, the former, *d d'*, that of a stationary circular saw. The furrow is much deeper in the middle. *e e'*, this furrow should be carefully noticed. It commences in the upper right-hand corner, penetrates to the interior of the skull for half an inch, crosses *a a'*, and sweeps around by a curve toward the left. At this extremity it has three or four ends, and after crossing *a a'* the cutting was useless. The surgeon must have used the frontal bone as a center, and his hand as a radius, to give a circular motion to his implement. The outer side of this cut presents several ragged places, showing where the tool ran out. *f f'*, a straight, deep, and short furrow on the left side. At its lower extremity it is very plain, and its progress upward can be marked to *f*. Where it pierces the cranium it crosses two other furrows, *e e'* and *h h'*. The space from its upper extremity to the crossing of *a a'*, marked *l* in Fig. 3, has been broken off violently. *g*, this short, shallow furrow, between *e e'* and *l*, seems to have had no motive, and it may have been simply a running out of the implement in making the curved furrow *e e'*. *h h'*, this furrow is at the lower left-hand corner of the opening. Its terminations on the outer table are quite obscure, but it is the cleanest cut of all, penetrating through the cranium along its whole extent.

Thus, by a series of saw-cuts and breaks, this mass of bone, which by courtesy we may call a *rondelle*, was removed. It can hardly be said to throw light upon the problem, for it has introduced a complication of surgery quite unknown hitherto. I may be allowed to venture a guess that the somewhat quadrangular pieces which would result from the two operations, bounded by the cross line *a a'*, were wrought into some useful thing, like the point of an arrow or spear. Instances are not wanting among peoples of low civilization where human bones have been considered to have great potency.